

Trends in manufacturing employment

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The challenges experienced by Canadian manufacturers in the past few years are a subject of public policy interest (Industry Canada 2007). These challenges have very real effects on the economy. From 2004 to 2008, more than one in seven manufacturing jobs, nearly 322,000, disappeared. In some regions of the country where the economy is not very diversified, the loss of manufacturing jobs can have particularly negative effects. In these regions, the closure of even a single plant, supplied by several companies, can weaken the economy.

At the same time, job growth in other industries has been relatively strong. In fact, from 2004 to 2008, over 1.5 million jobs were created in the rest of the economy—a growth of 11%. The national unemployment rate through 2007 and 2008 was also regularly among the lowest in the past 30 years. Manufacturing is clearly faring worse than the rest of the economy.

This study paints a detailed picture of employment trends in manufacturing in Canada from 1998 to 2008. Most of the data are from the Labour Force Survey (LFS) (see *Data source and definitions*).

The global context

Canada is far from being the only country having to deal with a downturn in its manufacturing base. The United States, which continues to be Canada's largest trading partner, lost close to one-quarter (4.1 million) of its manufacturing jobs between 1998 and 2008.¹

The vast majority of other Organisation for Economic Co-operation and Development (OECD) member countries have also recorded major job losses in this industry in the past few years (Pilat et al. 2006). From 1990 to 2003, employment in manufacturing

decreased by 29% in the United Kingdom, 24% in Japan, 20% in Belgium and Sweden, and 14% in France. Ireland was the only country to experience impressive growth (25%). However, this growth was in the specific context of an influx of foreign investment and a service sector that grew even more rapidly than manufacturing. Mexico, Spain, and, to a lesser extent, Canada and New Zealand were the only other countries to increase manufacturing jobs from 1990 to 2003. The last available year for purposes of international comparisons being 2003, the result for Canada does reflect the significant job losses since 2004. The share of manufacturing in total employment has regressed persistently in almost all OECD member countries. This is not a recent trend. For example, in the early 1970s, more than one in five jobs in the United States were in manufacturing. In 2003, this proportion barely exceeded 11%. In the United Kingdom, over 30% of jobs in the early 1970s were in manufacturing. In 2003, this proportion dropped to 12%.²

Data source and definitions

The Canadian data come from the **Labour Force Survey** (LFS). The LFS is a monthly survey of about 54,000 households. The LFS sample is representative of the civilian non-institutionalized population 15 years of age and over. The LFS excludes those living on reserves, full-time members of the Canadian Armed Forces, and institutional residents. The territories are also excluded from this study. Industries are classified according to the **North American Industrial Classification System** (NAICS). Manufacturing corresponds to codes 31 to 33.

Contrary to surveys of companies, the LFS counts workers, not jobs. The number of workers can be different from the number of jobs since a worker can have more than one job. In the case of those with more than one job, the characteristics presented are for the main job (defined by hours worked in the reference week). For simplicity, **workers** and **jobs** are used interchangeably.

The LFS being a cross-sectional survey, it is impossible to draw conclusions on the dynamics of job replacement and entries into and exits from unemployment spells.

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Over the long term, the proportion of service-sector jobs has increased while manufacturing's share has declined in almost all OECD countries. This phenomenon, if it can explain the long-term trends in the relative share of manufacturing jobs in total employment, does not explain the decline in the absolute number of manufacturing jobs. Other factors are likely to contribute on various scales to this general trend among the most industrialized countries: structural contributors such as the phenomenon of production moving to countries like China (Pilat et al. 2006, and Banister 2005), demographic contributors (Pilat et al. 2006), productivity growth (Wölfl 2005 and Forbes 2004), and tariff reduction (Beaulieu 2000 and Larochelle-Côté 2007). There are also more conjunctural contributors, for example, brisk fluctuations in exchange rates like those that Canada experienced for about ten years.

As manufacturing activity has declined in relative importance in OECD countries, China has become the world centre of manufacturing employment. In fact, the number of workers in manufacturing in China was estimated at 109 million in 2002, which represents more than double the combined total (53 million) in all of the G-7 member countries (Pilat et al. 2006, and Banister 2005).

Demographics (in particular the aging of the population observed in almost all developed countries) contribute to the increase in demand for services at the expense of manufactured products. In fact, the total final demand in numerous OECD countries shows a progressive decrease in the demand for manufactured products (Pilat et al. 2006).

When productivity growth in manufacturing is greater than that in the services-producing sector, a reallocation of manufacturing jobs to the service sector can be expected (Wölfl 2005). In the United States, for example, labour productivity growth in manufacturing was far greater than that in the entire non-agricultural economy since the 1970s, contributing to a decrease in the importance of the manufacturing industry in employment. Of course, rapid productiv-

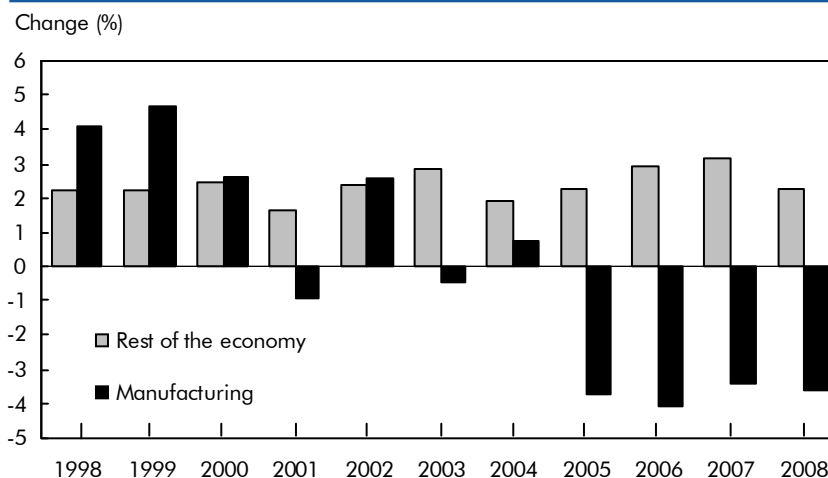
ity growth is greatly beneficial to the economy. Increased productivity contributes to an increase in the standard of living and to the improvement of competitiveness. However, increased productivity also means that a firm can produce the same quantity of goods with fewer workers, which can lead to job losses (Forbes 2004).

Variations in the exchange rate certainly have a significant impact on manufacturing in any country actively involved in international trade. Canada has experienced major fluctuations in its exchange rate for the last ten years with no general trend in appreciation or depreciation. The effect on manufacturing firms is unclear because the effect on income from exports can be compensated in large part by the effect on the prices of imported inputs (Ghanem and Cross 2008). A strong appreciation in the exchange rate will decrease an exporter's income while also making imported supplies, parts, and equipment more affordable.

Trends in Canada

Over the past ten years, the labour market in manufacturing was marked by a period of great drive, slowdown, and a significant decline. The recovery of the labour market in Canada since the mid-1990s first coincided with a boom in employment in manufacturing, which had been hit quite hard by the recession of 1991 to 1993. From 1998 to 2000, growth in manu-

Chart A After increasing in the late 1990s, manufacturing employment stagnated and then declined



Source: Statistics Canada, Labour Force Survey.

facturing employment was strong, peaking at 4.7% in 1999, and was greater than growth in the rest of the economy for those three years (Chart A). From 2001 to 2004, employment remained relatively stagnant, with the exception of relatively good growth in 2002 following the general economic challenges of 2001. After recording very weak growth of 0.7% in 2004, employment in manufacturing experienced a clear downward trend with successive annual losses of at least 3% from 2005 to 2008. In these four years, more than one in seven manufacturing jobs were lost.

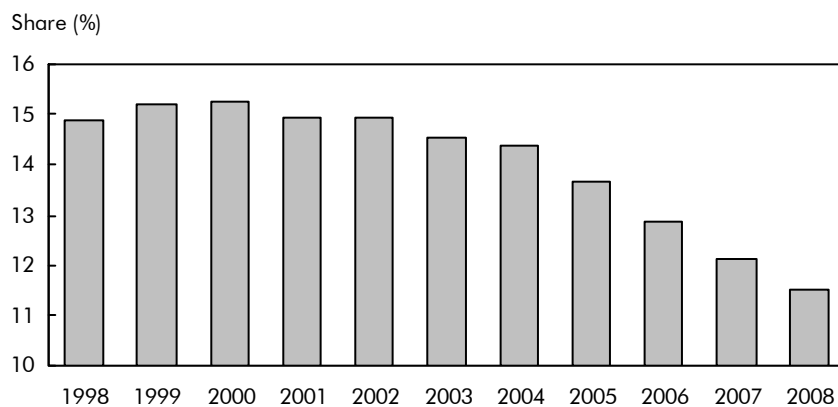
These losses resulted in the rapid erosion of the share of manufacturing jobs in the economy, from 14.9% in 1998 to 11.5% in 2008 (Chart B).

Job losses in manufacturing were compensated by major gains in the service sector and construction industry (Table 1). Accordingly, from 1998 to 2008, when the share of manufacturing jobs fell by 3.4 percentage points, the shares for services and construction increased by 2.5 and 2.0 points respectively, with 9 of the 15 service industries seeing their share increase.

General downturn in manufacturing since 2004

Almost all manufacturing industries have been in sharp decline since 2004. Of the 23 studied, only 6 showed job growth from 2004 to 2008, notably those pertaining to transportation equipment other than automobiles and automobile parts (9.2%), oil and coal products (8.5%), and computer and electronic products (7.4%). Conversely, 17 industries had job losses, often in high proportions (Table 2).

Chart B Manufacturing's share of employment has fallen sharply since the turn of the century



Source: Statistics Canada, Labour Force Survey.

Textiles and clothing, which has long been one of the largest manufacturing employers in the country, was the hardest hit among the manufacturing industries. From 2004 to 2008, clothing manufacturers and textile and textile product mills saw almost half of their jobs disappear.

Table 1 Jobs by industry, share of total employment

	1998	2001	2004	2008
	%			
Goods sector	26.0	25.3	25.0	23.5
Agriculture, forestry, fishing and hunting	3.8	2.8	2.7	2.4
Mining, quarrying, and oil and gas extraction	1.3	1.2	1.2	1.5
Utilities	0.8	0.8	0.8	0.9
Construction	5.2	5.5	6.0	7.2
Manufacturing	14.9	14.9	14.4	11.5
Service sector	74.0	74.7	75.0	76.5
Wholesale trade	3.2	3.7	3.7	3.7
Retail trade	11.9	12.1	12.1	11.9
Transportation and warehousing	5.1	5.2	5.0	5.0
Information and cultural industries	2.7	2.7	2.4	2.3
Finance and insurance	4.3	4.3	4.3	4.5
Real estate, rental and leasing	1.8	1.6	1.7	1.7
Professional, scientific and technical services	6.1	6.6	6.4	7.0
Management of companies and enterprises	0.0	0.0	0.0	0.0
Administrative and support, waste management and remediation services	3.4	3.6	3.9	4.0
Educational services	6.6	6.6	6.5	7.0
Health care and social services	10.2	10.3	10.9	11.1
Arts, entertainment and recreation	1.7	2.0	2.2	2.1
Accommodation and food services	6.5	6.3	6.3	6.3
Other services	5.0	4.5	4.4	4.4
Public administration	5.6	5.3	5.2	5.4

Source: Statistics Canada, Labour Force Survey.

Table 2 Jobs in manufacturing industries

	2008	Change 1998 to 2004		Change 2004 to 2008	
	number	number	%	number	%
Textile mills	9,600	3,400	20.7	-10,200	-51.5
Clothing	44,400	-32,700	-28.5	-37,800	-46.0
Textile product mills	14,700	-14,700	-37.1	-10,200	-41.0
Wood products	129,000	37,900	25.5	-57,300	-30.8
Motor vehicle parts	98,700	37,200	36.4	-40,600	-29.1
Plastics and rubber products	103,300	26,700	23.9	-35,300	-25.5
Motor vehicles	64,500	3,800	5.0	-15,900	-19.8
Machinery	112,300	35,100	33.9	-26,200	-18.9
Furniture and related products	103,600	32,100	33.9	-23,100	-18.2
Miscellaneous	85,600	12,900	14.3	-17,800	-17.2
Primary metal	77,400	-15,100	-14.0	-15,000	-16.2
Paper	90,600	-17,900	-14.7	-13,200	-12.7
Printing and related	101,100	19,000	20.2	-11,900	-10.5
Clay and refractory products	59,000	14,800	29.4	-6,200	-9.5
Chemicals	109,800	9,300	8.6	-7,800	-6.6
Food	259,400	45,600	20.0	-14,000	-5.1
Electrical equipment, appliances and components	47,800	-1,900	-3.8	-900	-1.8
Metal products	177,500	17,500	11.0	1,500	0.9
Beverage and tobacco products	38,700	-600	-1.6	1,400	3.8
Leather and allied products	8,000	-6,200	-44.6	300	3.9
Computer and electronic products	109,500	-3,300	-3.1	7,500	7.4
Petroleum and coal products	19,100	-1,000	-5.4	1,500	8.5
Transportation equipment (except motor vehicles and parts)	106,700	-2,900	-2.9	9,000	9.2

Source: Statistics Canada, Labour Force Survey.

The Canadian automotive industry was also hard hit. Automotive parts manufacturing lost more than one-quarter of its employees from 2004 to 2008, while motor vehicle manufacturing lost one-fifth. Parts manufacturers saw their jobs go from 139,300 to 98,700, which completely cancelled the strong growth from 1998 to 2004. For their part, motor vehicle manufacturers lost 15,900 jobs between 2004 and 2008, following a rather modest job growth of 5.0% from 1998 to 2004. The Canadian automotive industry, concentrated mainly in Ontario, has been changing for several years. Vehicle production by the 'Big Three' U.S. automakers has been in sharp

decline since 1998, while it has increased in Japanese-owned plants (Roy and Kimyani 2007).

All industries related to wood and paper are beleaguered. Wood product manufacturers lost 57,300 jobs from 2004 to 2008, which more than negated all of the growth experienced from 1998 to 2004 (37,900 jobs). The entire lumber industry has experienced major challenges in these past few years, having to deal with the imposition of antidumping and countervailing duties by the United States from 2002 to 2006, the increase in energy and raw materials prices, the decrease in the demand for and price of lumber and the increase in the exchange rate of the

Canadian dollar (Dufour 2007). The paper manufacturing industry has, for its part, been in a constant downturn for ten years, employment having declined successively by 14.7% from 1998 to 2004 and by 12.7% from 2004 to 2008. Mirroring the slump in the paper industry, the printing industry lost 10.5% of its jobs from 2004 to 2008.

Decline in unionization in manufacturing

Looking at the attributes of manufacturing jobs helps to determine whether certain types of jobs were more affected and to what

Table 3 Job characteristics

	1998	2008
Manufacturing sector		
%		
Full-time jobs	96.0	95.9
Part-time jobs	4.0	4.1
Company size		
Less than 20 employees	12.4	12.9
20 to 99 employees	20.4	20.2
100 to 500 employees	19.5	19.6
More than 500 employees	47.7	47.3
Unionization rate	32.2	26.4
Average age (years)	38.8	41.4
Average years of seniority	9.0	9.6
Average earnings (current \$)	15.6	20.8
Rest of the economy		
%		
Full-time jobs	78.6	79.7
Part-time jobs	21.4	20.3
Company size		
Less than 20 employees	23.7	20.3
20 to 99 employees	15.8	15.4
100 to 500 employees	15.1	13.4
More than 500 employees	45.4	50.9
Unionization rate	30.1	29.5
Average age (years)	38.3	39.9
Average years of seniority	7.9	8.0
Average earnings (current \$)	12.6	17.7

Source: Statistics Canada, Labour Force Survey.

extent the face of employment in manufacturing in Canada is changing. Only a very small minority (4.1% in 2008) of manufacturing jobs are part time and this proportion has remained virtually unchanged since 1998, which shows that proportionately as many full-time as part-time jobs were lost (Table 3). The very low proportion of part-time employment is an attribute peculiar to manufacturing—over 20% of jobs in the rest of the economy are part time.

Unionization is generally seen, among other things, as an indicator of job quality. Unionized jobs typically benefit from a wage pre-

mium, even when employee and workplace attributes are taken into consideration (Fang and Verma 2002). From 1998 to 2008, unionized jobs in manufacturing disappeared twice as quickly as non-unionized ones. Consequently, the rate of unionization decreased from 32.2% to 26.4%. For the rest of the economy, unionization declined less, from 30.1% to 29.5%.

The distribution of manufacturing jobs according to firm size has also not experienced notable change in the past ten years, which means that job losses did not hit small businesses harder than large businesses. Large businesses could have been expected to find it easier to deal

with adverse market conditions because of their better financial capacity and their ability to diversify their activities more easily. This does not mean that jobs in small businesses are more protected, because less pronounced job losses in small businesses could mask a very significant turnover in the workforce and in firms themselves. In fact, layoff rates are much higher in small businesses than in large businesses (Galarneau and Stratychuk 2001).

Central Canada hit harder

Quebec and Ontario make up Canada's industrial core. Outside these two provinces, there are

Table 4 Changes in jobs by province

	Change 1998 to 2004		Change 2004 to 2008		Manufacturing jobs in 2008	
	number	%	number	%	number	% of total employ- ment
Manufacturing	198,600	9.5	-321,800	-14.0	1,970,300	11.5
Newfoundland and Labrador	1,400	8.9	-3,100	-18.0	14,100	6.4
Prince Edward Island	800	14.8	-100	-1.6	6,100	8.7
Nova Scotia	2,600	6.3	-4,500	-10.3	39,100	8.6
New Brunswick	5,300	14.5	-6,700	-16.0	35,200	9.6
Quebec	30,200	5.0	-86,700	-13.8	543,600	14.0
Ontario	119,200	12.2	-198,600	-18.1	901,200	13.5
Manitoba	6,000	9.5	-200	-0.3	68,700	11.3
Saskatchewan	-400	-1.4	2,100	7.3	30,900	6.0
Alberta	18,400	14.6	-300	-0.2	144,100	7.2
British Columbia	15,300	7.8	-23,800	-11.3	187,400	8.1
Rest of the economy	1,702,100	14.2	1,500,700	11.0	15,155,600	88.5
Newfoundland and Labrador	20,500	11.6	9,100	4.6	206,200	93.6
Prince Edward Island	6,500	12.0	3,500	5.8	64,200	91.3
Nova Scotia	44,300	12.5	15,500	3.9	414,100	91.4
New Brunswick	29,500	10.6	22,800	7.4	331,000	90.4
Quebec	392,800	14.8	287,900	9.4	3,338,100	86.0
Ontario	744,000	16.6	569,400	10.9	5,786,100	86.5
Manitoba	36,400	7.7	30,300	6.0	538,000	88.7
Saskatchewan	9,600	2.2	30,900	6.9	481,800	94.0
Alberta	229,200	16.6	256,100	15.9	1,869,200	92.8
British Columbia	189,000	11.4	275,400	14.9	2,126,900	91.9

Source: Statistics Canada, Labour Force Survey.

generally proportionately fewer manufacturing jobs. In 2008, manufacturing jobs in Quebec and Ontario represented 14.0% and 13.5% of jobs, respectively, whereas the national average was 11.5% (Table 4). Together, these two provinces account for more than 1.4 million (73.3%) of the manufacturing jobs in Canada. Manitoba also has a significant manufacturing presence, with 11.3% of its jobs depending on it. The proportions for all the other provinces are below the national average. Saskatchewan, which is more natural resources-oriented, is the province with the fewest jobs in manufacturing (6.0%).

In six provinces, at least one in ten manufacturing jobs were lost from 2004 to 2008.³ The largest drop was in Ontario, where 198,600 jobs, almost one in five (18.1%), disappeared in only four years. Significant drops were also seen in Newfoundland and Labrador (-18.0%), New Brunswick (-16.0%), Quebec (-13.8%), British Columbia (-11.3%) and Nova Scotia (-10.3%).

Do small urban areas have more difficulty dealing with job losses?

While many manufacturers are located in large metropolitan areas such as Toronto, Montréal and Vancouver, many are found in smaller, 'one-industry' towns. In these less diverse locales, lost manufacturing jobs may be harder to replace. To find out, employment trends were compared on an urban-rural gradient: very large CMAs (Toronto, Montréal and Vancouver); large CMAs (Québec, Ottawa-Gatineau, Hamilton, Winnipeg, Calgary and Edmonton); small CMAs (a population between

100,000 and 500,000); and small towns and rural regions (census agglomerations with fewer than 100,000 inhabitants and rural areas).

From 2004 to 2008, very large CMAs lost the most manufacturing jobs proportionally. More than 150,000 jobs were lost in one of these three very large CMAs, a collective drop of 17.2% (Table 5). In smaller regions, the drops were not as large, but were significant nonetheless. In small CMAs and in small towns and rural areas, manufacturing jobs decreased by 14.8% and 11.8% respectively. Although small towns and rural areas lost fewer jobs proportionally, the rest of their economy also progressed more slowly. Total employment growth from 2004 to 2008 was 7.6% in very large CMAs, compared with 6.6% in small towns and rural areas.

Over this period then, small town economies appear as resilient to manufacturing job losses as those of very large cities. One way of measuring this resilience is by

examining the ability of regions to replace lost manufacturing jobs with jobs in other industries. On average, for each manufacturing job lost in very large cities between 2004 and 2008, 3.8 jobs were created in other industries. In small towns and rural areas, for each manufacturing job lost, 4.7 jobs were created elsewhere. The difference between these two ratios is not statistically significant.⁴

However, the pool of non-manufacturing jobs is generally lower paying in small towns and rural areas than in very large CMAs. In small towns and rural areas, wages and salaries in manufacturing are on average 25.3% higher than in non-manufacturing, compared with a difference of 11.2% in very large CMAs (Table 6).⁵

Manufacturing output and productivity

Examining the evolution of industrial production, measured by gross domestic product (GDP), provides a different perspective than em-

Table 5 Change in jobs by type of region

	2008	Change 1998 to 2004		Change 2004 to 2008	
		'000	%	'000	%
Manufacturing	1,970.3	198.6	9.5	-321.8	-14.0
Montréal-Toronto-Vancouver	742.4	69.2	8.4	-154.2	-17.2
Large census metropolitan areas	273.8	30.8	11.5	-23.9	-8.0
Small census metropolitan areas	267.4	16.0	5.4	-46.5	-14.8
Small towns and rural areas	691.7	82.6	11.8	-92.3	-11.8
Rest of the economy	15,155.6	1,702.1	14.2	1,500.7	11.0
Montréal-Toronto-Vancouver	5,323.8	706.5	17.5	581.1	12.3
Large census metropolitan areas	2,885.1	367.7	16.7	309.8	12.0
Small census metropolitan areas	2,124.9	233.4	13.7	182.5	9.4
Small towns and rural areas	4,827.2	394.5	9.9	432.9	9.9

Source: Statistics Canada, Labour Force Survey.

Table 6 Job characteristics by type of region

	Union- ization	SME ¹	Average age	Average seniority	Average hourly earnings
Manufacturing sector		%		years	\$
Montréal-Toronto-Vancouver (ref.)	21.7	58.6	41.9	8.7	20.09
Large census metropolitan areas	20.8	51.1*	40.6*	8.8	22.87*
Small census metropolitan areas	30.8*	44.5*	41.1*	10.5*	22.76*
Small towns and rural areas	32.4*	50.5*	41.0*	10.4*	19.78*
Rest of the economy					
Montréal-Toronto-Vancouver (ref.)	27.0	48.6	39.9	7.6	18.06
Large census metropolitan areas	30.6*	42.7*	39.0*	7.4	19.93*
Small census metropolitan areas	31.9*	45.6*	39.4*	8.2*	17.82*
Small towns and rural areas	30.4*	55.9*	40.7*	8.6*	15.79*

* significantly different from the reference group (ref.) at the 0.05 level
 1. A small or medium-sized enterprise is defined as a business with less than 500 employees.
 Source: Statistics Canada, Labour Force Survey, 2008.

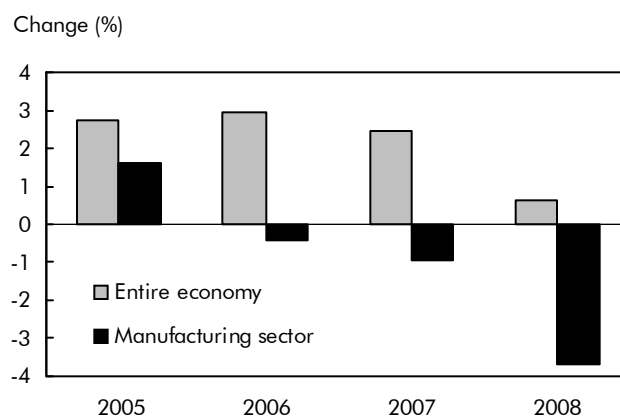
ployment data. Industrial production was in a slump from 2004 to 2007, and dropped 3.7% in the first two quarters of 2008 (Chart C). Each year, industrial production increased less than the total overall production. However, production generally decreased less than employment, meaning that some of the job losses can be attributed to increased productivity in manufacturing industries. In 3 out of 4 years from 2004 to 2007, and 7 out of 10 years from 1998 to 2007, labour productivity increased more quickly for manufacturing industries than for the economy as a whole (Kowaluk and Gibbons 2008). In other words, while production was decreasing, businesses were also becoming more efficient and could produce more with the same workforce. This trend of labour productivity increasing more quickly in manufacturing is neither new nor specific to Canada. In fact, manufacturing generally contributes greatly to overall productivity growth in most OECD countries (Pilat et al. 2006).

Conclusion

From 2004 to 2008, more than one in seven manufacturing jobs (322,000) disappeared in Canada. The majority came from Ontario, but drops were also evident in other parts of the country. In six provinces, at least 1 in 10 manufacturing jobs disappeared from 2004 to 2008. These losses occurred during a period of economic turbulence in the country as the exchange rate fluctuated widely.

These trends are not unique to Canada—manufacturing has been declining in most OECD countries. The situation in Canada was noticeable for being somewhat delayed, with manufacturing jobs beginning to decline only in 2004, while other countries, notably the United States, had already registered significant job losses for several years.

Chart C While overall GDP grew from 2005 to 2008, manufacturing output declined since 2006



Source: Statistics Canada, Income and Expenditure Accounts Division.

Canada's very large metropolitan areas were hit harder than other regions of the country. The country's small towns and rural areas fared slightly better in comparison. In addition, contrary to what may have been expected, small towns and rural areas were at least as capable as very large metropolitan regions of replacing lost manufacturing jobs with jobs in other industries. However, in small towns and rural areas, jobs in other sectors have lower salaries than those in manufacturing. This is also the case in very large metropolitan regions, but to a lesser extent.

The employment decline has affected almost all manufacturing industries. However, textiles, clothing, and motor vehicle and automotive parts, as well as industries related to wood and paper, were hit hardest. The jobs lost were more likely to be unionized jobs.

The trends described show that the services shift in the Canadian economy is continuing in major cities and smaller regions alike. It is not known whether this trend will pick up speed, as data from recent years would seem to indicate, or whether the major adjustments are over, in which case manufacturing jobs should stabilize in the coming years.

Perspectives

■ Notes

1. The latest data for the United States, unlike other data in this section, are from the Current Employment Statistics Program, United States Bureau of Labor Statistics.
2. These international data come from the OECD STAN Indicators Database for Structural Analysis (December 2005 version). Historical data from 1970 onward are presented in Pilat et al. (2006).
3. Newfoundland and Labrador, Nova Scotia, New Brunswick, Quebec, Ontario and British Columbia.
4. A *t* test did not dismiss the possibility that the two ratios were equal at a threshold of 5%. The test was also repeated by limiting the sample to the two largest manufacturing provinces—Quebec and Ontario—with similar results.
5. Without a longitudinal analysis, it cannot be determined whether persons laid off in manufacturing can access some of the highest paying service sector jobs. This type of study is currently in progress.

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